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VERATRUM AN ANTIDOTE TO OPIUM.

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Read before the Atlanta Academy of Medicine.

*It is stated in your journal that
you have received a copy of the
Constitution -*

This assertion is the result of the fact that opium is an antidote to veratrum. That it is, none who have had any experience with overdoses of veratrum will deny. Dr. Norwood, to whom we are mainly indebted for this valuable drug, recites several cases where large quantities of his tincture were given; in one instance as much as one drachm, which caused the most alarming prostration, vomiting and general relaxation; all of which symptoms were almost immediately dispelled by opium and whisky. I have in my own practice had frequent occasions to verify his statement, that there need be no fear of a fatal result from veratrum if the antidote above mentioned is given. Indeed, the antagonism is as marked as that of acids and alkalies. The question very naturally resolves itself into this shape: are antidotes reciprocal? The answer is obvious; it cannot be otherwise but in the affirmative; for an acid is no more incompatible with an alkali than an alkali with an acid. Belladonna, or its alkaloid, atropia, has for some time enjoyed the confidence of many of the most learned and distinguished in our profession as an antidote to opium. It is not my object or intention, in this paper, to attempt to prove that it is not an antidote; for, with Prof. Reese of Philadelphia, I am constrained to acknowledge, that after a fair and honest review of all the cases, pro and con, as to the antagonism of belladonna and opium, the evidence in their favor has preponderance. This testimony I give, in the face of the fact that experiments on the lower animals seem to show that where the two are given together, the effect of each is intensified. Dr. Harley, F.R.C.P., F.L.S., etc., in the Galstonian Lectures of 1868, extended and including a complete examining-

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tion of the active constituents of opium, arrives at a totally different conclusion. In this lecture the question of the antidotal action of opium and belladonna are considered at great length. The recorded cases are carefully examined and classified in three tables: the analysis of these, in connection with very many and varied experiments, "justifies the conclusions that the evidences of antagonism are inconclusive; that belladonna has no influence whatever in accelerating recovery from the poisonous effects of opium; but on the other hand, the effects of the opium are intensified and increased. It is utterly powerless in obviating the chief danger of opium poisoning, the depression of the respiratory function." He states, however, that in doses of from the 1-96 to the 1-100 of a grain, atropia is the greatest and most potent of all agents, not excepting carbonate ammonia and whisky, as a cardiac stimulus, and that in these doses it may, and doubtless will, do good, where the pulse is very slow or weak. How much atropia is necessary to counteract a given quantity of morphine, has never been ascertained. We all give it with fear and trembling, knowing that the remedy, if pushed, is as bad as the disease. In other words, the remedy is too dangerous. If any of us were called to a case where an alkali had been given in hurtful dose, we would not administer nitric, chromic or muriatic acids, but rather vinegar or citric acid; something that would not destroy both the poison and patient. I propose as a substitute for the too potent deadly night-shade, the milder veratrum. Beck, in his work on Medical Jurisprudence, classes veratrum and belladonna under the same head—acrid narcotics—both dilating the pupil and killing by producing convulsions. There would seem to be, from this, some analogy between their action in poisonous doses. It is only by careful scrutiny of recorded observations as to the effects of drugs that any valuable contribution to therapeutics is obtained. With this view I present the following cases, the notes of which were carefully and truthfully taken at the time. As to the *modus operandi*, I do not attempt to explain it. The very best reason that can be given why we administer this or that is, *it is successful*.

J. H., æt. thirty, dissipated, took, October 26, 1872, in my presence, little over six drachms of tinct. opii. Assuming thirty drops of laudanum to be equal to a grain of crude opium, he took at one dose twenty-four grains. He had taken half an ounce of laudanum ten or fifteen minutes before this, (16 grains) thus

taking in all forty grains of opium, or 1,200 drops of the tincture. All persuasion to induce him to take an emetic being futile, I prevailed on several bystanders to throw him down, and then vainly attempted to give him a mixture of ipecac and sulphate of zinc aa. grs. xxx. I could not make him swallow, though his nose was held and threats used, until I poured some of the solution in his eyes, which caused so much pain that he came to terms, and took the emetic a few moments after. It not having the slightest effect, a drachm more of ipecac was administered. In ten minutes he was asleep. I had him walked and shaken, thinking that the emetic would act could he be kept awake. There was no stomach pump in the place. He soon ceased to step or exhibit any symptom of pain or sensibility whatever. Placed his head under a pump, and gave him the cold douche five minutes. Meanwhile the coma gradually and fearfully increased. Had him carried to Dr. McMillan's office, where there was an electric battery. I was here joined and assisted by Dr. Henderson. Under the electric stimulus he so far regained consciousness that Dr. McMillan and myself concluded to give him more ipecac. This was 8 o'clock. Suddenly, while taking it, he collapsed, and some of the fluid passed down the trachea. Respiration was kept up partly by artificial means, but principally by placing one pole of the battery along the course of the pneumogastric nerve, above the sternum, and the other at the pit of the stomach, for at least three quarters of an hour. At this juncture the glass of the battery containing the acid broke, and we had no substitute. Mustard was applied to the spine, chest and abdomen, and friction used on extremities. Pulse slow, full, 30; respiration stertorous, 8; face much congested; nose and ears purple; extremities cold. Had him moved to his room, sent for an old-fashioned friction magnetic battery, the only one in the town. The pupils were, of course, tightly contracted. We concluded to try hypodermic injection of atropia; it was administered until the pupils were widely dilated. At 11 p.m. Drs. McM. and H. left me, saying the man would die very soon; such was also my opinion, but I determined to give him every attention. The battery was used on him with occasional intermissions until three o'clock, when his breathing was six, and the pulse suddenly ceased. I immediately injected under the skin a drachm of raw whisky, and felt the pulse return before the syringe was withdrawn. After his pupils were dilated by

the atropia his pulse became rapid and weak. Fifteen minutes later I injected another drachm of whisky and two drops of tincture of veratrum viride. Five minutes after the dose his pulse became slower, but weaker, and there was paralysis of the entire right lung. No air whatever entered or was expelled from it for two or three respirations. I now had him violently rolled about the bed, slapping and compressing the chest. Five or six such turns caused a groan and an emesis of four or five ounces. He opened his eyes, but immediately closed them and relapsed into the comatose condition. This was at 3:15 A.M., just fifteen minutes after the first dose of veratrum. From that time until 5 I gave him six hypodermic injections of a drachm each of raw whisky; and two, an hour apart, of two drops each of tinct. veratrum viride, with marked improvement each time. He was meanwhile persistently and continually worried, the battery applied to spine, the cold douche was used, and he was walked, slapped, whipped, tickled, etc. Any such procedure, however, after two or three repetitions, lost all effect. By 5 A.M. he was able to swallow a teaspoonful of very strong coffee, one cup of grounds to three of water. By 8 he had taken four or five of such cups, and vomited freely. After this he vomited several times, but at 9 he retained a tolerably stiff drink. Once, about half-past 6, I let him take a nap. Whenever he was not worried he slept, and would, while sleeping, have general convulsive movements, and the breathing would fall from 14 to 8 per minute. I did not allow him to lie down at all during the day, although he was pretty thoroughly aroused by 10 A.M., and perfectly rational. I permitted him to take naps of from ten to thirty minutes, sitting. He vomited everything he took that day, except the toddy before mentioned.

October 28th.—Slept tolerably well last night, but was very nervous.

November 1.—Has suffered considerably from nervousness and irritability of the stomach during the past three days. Gave laudanum, bromide of potassium and quinia, *pro re nata*.

On October 29th he left for his home, and November 2d he resumed his work. The whisky did not cause a single abscess; all soreness about the chest, where injections were made, was superficial, and plainly attributed to the mustard, which blistered in several places over the thorax, and the skin is still highly inflamed wherever it was applied. He has complained always of

his throat—described the sensation as brassy, and was, until to-day, hoarse. This is doubtless caused by atropia. His bowels moved spontaneously on the day after he took the laudanum.

November 12th.—Been at work steadily since the 2d. No abscess has developed itself.

Remarks.—Atropia in this case certainly did no good; the veratrum much. In fact, to it do I mainly attribute the recovery, but I do not believe it would have been sufficient in itself. My timidity in the use of the agent doubtless put off the good effect. This man was as persistently worried as three of the most obedient attendants could possibly perform such an office. They kept him alive from the combined effects of both drugs, until the veratrum suggested itself. It will be particularly noticed that no emesis occurred until veratrum viride was given.

CASE II. December 30, 1873.—B. R., æt. fifty-two, merchant. Had suffered from occasional mental derangements for eighteen months. During such attacks he attempted to take his life in various ways, by drowning, the razor, and phosphorous. To-day he procured from J. P. M. & Co., druggists, an ounce of gum opium, and before he was detected he had eaten the whole of it. This he did about an hour before I saw him. When I first saw him, he was highly intoxicated from it, covered with a profuse perspiration, and somewhat sleepy. He persistently refused to take anything; was perfectly rational. About half an hour was lost in persuasion and force, endeavoring to get him to take zinc and ipecac; fully another half hour, in having a funnel made to fit the end of a catheter (male). Through it, introduced down the nose into the pharynx, I gave sixty or seventy grains sulph. zinc, and as much ipecac. He almost immediately vomited. In the emesis there was much opium; the smell of it could be detected diffused over the room. During all this time he was of course worried and walked, but the coma continued to increase. I then gave him every half hour, ten to twelve drops of tincture veratrum viride, hypodermically, with an emesis, or an attempt at vomiting after each injection of veratrum. Everything not given by hypodermic means had to be given through the catheter inserted in the nose down the throat. He took the opium about 11½ o'clock A.M. Until 6½ his pupils did not contract, nor did he become so drowsy that he ceased to step, or give rational answers, or evince pain when flagellated, or when the battery was put to him; nor did his pulse become slow, or respiration stertorous. About this

time Dr. Griggs, family physician, came, and only one more dose of veratrum was given, Dr. G. having no confidence or experience in the veratrum treatment. He recognized Dr. G., and spoke to him. His pulse at that time was 65; respiration 15 or 16. We commenced to use the cold douche, and at 7 o'clock gave atropia, which undoubtedly increased the coma. We gave it until the pupils were dilated, for they began to contract at 6. Mustard was applied to chest, abdomen, spine, and extremities. His pulse never became *slow nor full*, but his breathing did after the atropia was given. At 8 o'clock exactly, he died suddenly, from asphyxia, the heart continuing to act for several minutes after respiration ceased. Artificial respiration could not be induced with the battery.

Remarks.—The large amount of opium, and the length of time that elapsed between the taking and commencement of treatment, are sufficient to convince any thinking man that there was but one termination. The good effects of the treatment are manifest by the length of time that intervened before death. Not only was life prolonged, but the usual effects of opium were long in showing themselves. According to Dr. Christison, the usual duration of fatal cases is seven hours. This patient took hypodermically, in less than six hours, a drachm of tincture veratrum viride without lowering the pulse; in fact, it seemed to keep the heart going.

CASE III. February 2d, 1873.—Was called, in consultation with Dr. McMillan, to see W., æt. 12, who was suffering with meningitis. We concluded to give morphine. In fifteen minutes the symptoms were characteristic of opium poisoning: contracted pupils, no pulse, stertorous breathing, and coma. Under the cold douche and three injections of three drops each of tincture veratrum viride, he promptly vomited, pulse returned and pupils dilated in from one and a half to two hours. The morphine was given about 11 A.M. He died at 11 P.M., from the force of the disease, with no symptoms of opium.

Remarks.—The death of the patient in no way invalidates the conclusion that I am trying to prove. The epidemic of meningitis, which carried off this boy, was very fatal. The return of the pulse and dilatation of the pupils from the effects of the veratrum are particularly worthy of notice.

CASE IV. December 23d, 1875.—C., child six weeks old. Had taken five drops of a tincture of opium, which had remained un-

stopped until of a syrupy consistency. The dose was taken at 4 o'clock P.M. I saw it first at 6 P.M.; the breathing was 12, and sighing; pulse 60; coma well marked; pupils tightly contracted. By vigorous flagellation, or rude handling, could be induced to open the eyes, but efforts to make it swallow anything were futile. Gave, hypodermically, one drop of tincture veratrum viride, in 10 of brandy. One hour afterwards repeated the dose. In fifteen minutes it vomited slightly, about half an ounce of mucus. At 8½ there was another slight emesis; the symptoms unchanged, except more mucus in lungs. The cold douche was used, but produced no evidences of sensibility. Injected from four to six ounces of strong coffee per anum, which was partially retained. This was repeated about 9. At 9½ injected one-half drop of veratrum and fifteen of whisky. At 10¼ the child vomited freely, copiously, with instant improvement in every symptom. During the vomiting the coffee was passed from the bowels. It would cry and exhibit evidences of pain from slight inflictions, or even from loud speaking. At 10½, respiration 24, pulse 100; pupils normal. Mustard was used to spine and abdomen.

December 24th.—Except from soreness, the child was in usual health.

Remarks.—Half an hour before the last emesis the child was excessively nauseated and much relaxed. How much opium there was in the five drops this infant took is not certain, but it is a well-known fact that alcohol, and not the opium, is the constituent which evaporates. It must have taken at least eight drops of the ordinary tincture. Was this amount sufficient to cause death?

Dr. Kelso, in the *London Lancet*, vol. 21, page 304, relates a case where four drops of laudanum to a child thirty-six weeks old was fatal. A case mentioned in the *Medical Times*, vol. 10, page 436, where two drops of the tincture, given four times during eighteen hours, killed a child six weeks old. The cure in this case is to be attributed to the veratrum alone. Improvement in the pulse, after vomiting, is especially noteworthy.

CASE V.—Dr. E. H. Sholl, of Alabama, communicated to the Philadelphia *Medical and Surgical Reporter* a case of poisoning by morphine, which was cured by veratrum. The patient a negro boy fifteen years old, took an overdose of morphine, which had been prescribed for hiccough. It was followed by stertorous breathing, contracted pupils, etc. Eighteen drops tincture ver-

atrum, with two ounces of brandy, after one hour, caused all the symptoms to vanish.

CASE VI.—Dr. J. P. Logan, of this city, related before the Academy a case of opium poisoning, in which he gave tincture veratrum to control the cerebral symptoms. The result was an entire cure.

While I feel every confidence in veratrum as an antidote to opium, I would by no means neglect, under all circumstances, to give strong coffee when the patient could swallow it, and when he could not be induced to take it per orem, I should give it per anum, and also place particular stress on having the unfortunate walked, flagellated, tickled, etc. Obedient, active attendants are a host in themselves, and in no other emergency does the physician need such allies more. Electricity is also an agent not to be neglected. Of course no one will neglect to use every means to evacuate the contents of the stomach.